

RoomMate® POWERED SPEAKER SYSTEM*

BOSE
Better sound through research.



*Also Applicable to the Special Edition Apple/Bose RoomMate.

SPECIFICATIONS

Transducer:

1, 4½-inch full-range HVC driver
per enclosure

Enclosure:

High-impact Polystyrene Copolymer

Speaker Dimensions:

9" W x 6" D x 6" H
(22.9 W x 15.2 D x 15.2 H cm)

Shipping Weight:

12.5 pounds per system
(5.6 kg)

Frequency Response:

80 - 15 kHz

Maximum SPL:

(1 meter on axis pink noise)
100 dB

Input Impedance:

33 - 100 ohms
(100 - 320 ohms on newer units)

Switchable Sensitivity:

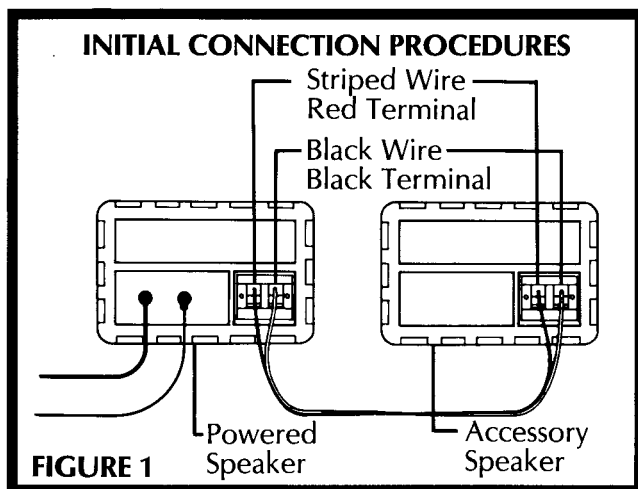
10 dB

RoomMate® INITIAL TEST PROCEDURES

NOTE: Since the RoomMate is a self-amplified loudspeaker system, it is best to begin initial testing as per the normal operating instructions. In this manner you will be able to verify that all connections are correct and if the original complaint can be duplicated.

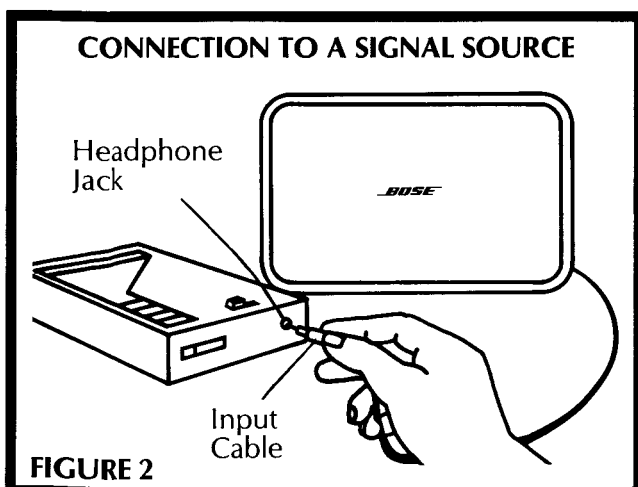
CONNECTION INSTRUCTIONS

1. Connect the RoomMate's **POWERED** enclosure's output terminals to the **ACCESSORY** enclosure's input terminals. Make certain that polarity is observed. (See Figure 1.)



2. Connect the **stereo** mini-plug of the **POWERED** enclosure to the **headphone** jack of any pocket portable, TV set, or other component with **headphone** output capability. (See Figure 2.)

NOTE: The RoomMate is a **stereo** unit. The **ACCESSORY** speaker will **not** function with a mono input **unless** a mono-to-stereo adaptor plug is used.



3. Connect the **POWERED** enclosure's power cord into a variac or wall outlet.

4. Adjust the output of the signal source to the desired operating level.

5. If the RoomMate system

A. Functions normally:

1. Check the input cable for intermittent operation.
2. Check the power cord for intermittent operation.
3. Make sure the customer is using a stereo source **or** a mono-to-stereo adaptor plug.

B. Has no output from either enclosure:

1. Check resistance of the power cord (30 to 100 ohms, depending on operating voltage) for open line cord or power transformer primary.
2. Check input cable (tip to sleeve and ring to sleeve) for an open condition (normally 33 - 100 ohms).
3. Check the PCB for failure.

NOTE: The amplifier PCB for both channels is located in the **POWERED** enclosure.

4. Measure the impedance of each transducer (approximately 1.5 ohms).

C. Output from POWERED enclosure only:

1. Check input cable (ring to sleeve) for open condition (normally 33 - 100 ohms).
2. Check continuity of speaker wire connecting the two enclosures together.
3. Check impedance of **ACCESSORY** enclosure's transducer by measuring at the input terminals (normally 1.5 ohms).
4. Check the PCB for failure.

NOTE: The amplifier PCB for both channels is located in the **POWERED** enclosure.

D. Output from ACCESSORY enclosure only:

1. Check input cable (tip to sleeve) for open condition (normally 33 - 100 ohms).
2. Check the PCB for failure.
3. Check impedance on **POWERED** enclosure's transducer (normally 1.5 ohms).

NOTE: If lack of bass response is noted, check wiring with schematic diagram on page 7 to assure that the speakers are wired in phase.

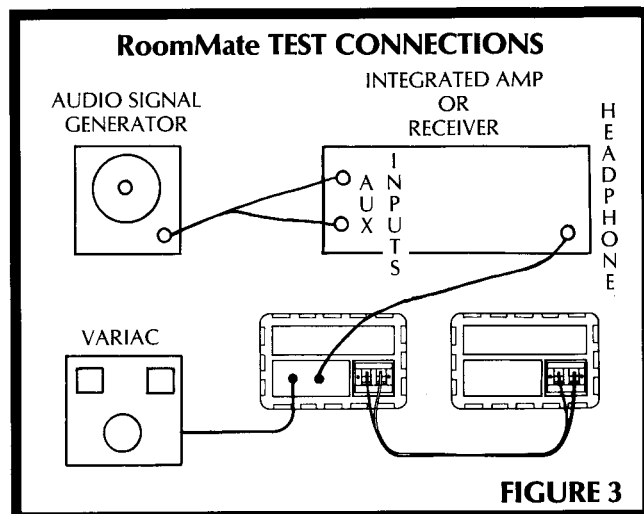
RoomMate® IN-DEPTH TEST PROCEDURES

TRANSDUCER TESTING

1. RUB AND TICK TEST: Connect a sine wave oscillator to the auxilliary input jacks on an integrated amplifier or receiver. Connect the input cable of the RoomMate to the headphone output of the amplifier. Connect the power cord to a variac and set to the appropriate voltage. (See Figure 3.) Adjust the frequency of the oscillator to 10 Hz and the headphone output to 100 mV, with the RoomMate connected. No extraneous noises such as rubbing, scraping, or ticking should be heard.

NOTE: To distinguish between normal suspension noise and rubs or ticks, remove the grille (see Grille Removal Procedure), and displace the surround of the driver slightly with your fingers. If the noise can be made to go away or get worse, it is a rub or tick, and the driver should be replaced. If the noise stays the same, it is suspension noise and the driver is fine. Suspension noises will not be heard with program material.

2. SWEEP TEST: Sweep the oscillator from 10 Hz to 15 kHz. There should be no loud extraneous sounds. If there are loud buzzes or distortion,



replace the driver. The whooshing noise from the port at 80 Hz is normal.

NOTE: There should be no buzzes or rattles from within the RoomMate cabinet. Redress any wire that buzzes.

NOTE: If lack of bass response is noted, check wiring with schematic diagram on page 7 to assure that the speakers are wired in phase.

TRANSDUCER REPLACEMENT PROCEDURES

1. GRILLE REMOVAL:

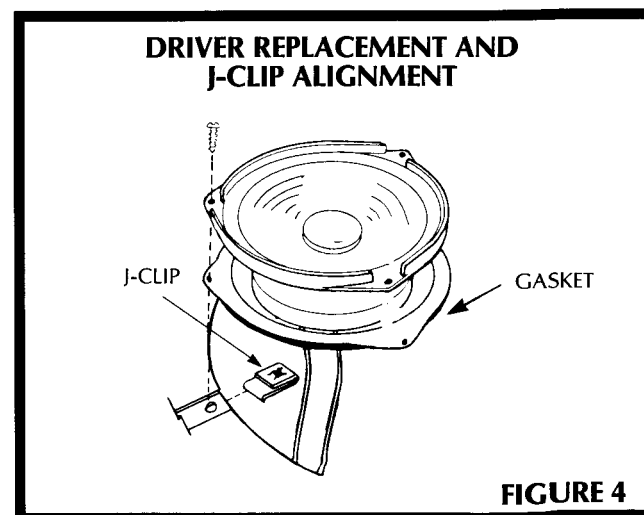
To remove the grille, grasp the **EDGE** of the grille at one of the corners. **GENTLY** work the grille out of the retaining slot.

NOTE: There is no grille frame exposed. You **MUST** grasp the grille on the cloth portion of the grille and **NOT** the polystyrene, which is part of the speaker enclosure.

2. DRIVER REPLACEMENT:

Using a cross recess screwdriver, remove the three (3) screws holding the driver in place. Carefully lift the driver out of the enclosure and cut the wires as close to the driver terminals as possible. Strip the wires and reconnect to the replacement driver. Make certain that the red wire is connected to the positive (+) terminal and the black wire is connected to the negative (-) terminal of the driver.

Align the driver and gasket to the J-clips. Make certain the gasket is correctly positioned behind the driver to provide an airtight seal. Secure the driver to the J-clips with the three (3) screws (see Figure 4). **DO NOT** overtighten.



RoomMate® PRINTED CIRCUIT BOARD TEST PROCEDURES

SCOPE

The RoomMate powered speaker system has its built-in amplifier **located** in the **POWERED** enclosure. This test procedure covers the following areas:

1. Idle current
2. Frequency response
3. Distortion
4. Compressor
5. Separation
6. Noise ratio
7. 10 dB gain switch
8. Output offset

TEST EQUIPMENT REQUIRED

1. Dual trace oscilloscope
2. Audio signal generator
3. Distortion analyzer
4. dB meter
5. Digital voltmeter
6. Two 2-ohm 5-watt load resistors
7. Integrated amplifier or receiver

NOTE: The amplifier or receiver **may not** be necessary **if** your audio signal generator is capable of producing a 4-volt signal into a 30-ohm load.

TEST PREPARATION

1. BAFFLE REMOVAL (Powered Enclosure):

To properly test the RoomMate PCB, you **must** use two 2-ohm load resistors on the amplifier outputs. To gain access to the amplifier PCB and the **POWERED** enclosure's output, you must remove the baffle. To remove the baffle, remove the six (6) cross-recess drive screws that hold the baffle in place. Do **NOT** remove the three (3) screws holding the driver in place.

Once the screws are removed, pry the baffle away from the enclosure body. This can be easily accomplished by inserting the hook portion of a scribe or your fingers into the ports and use this as a grasping area to pry the two sections apart. This will expose the transformer and PCB. Untwist the various service loops for convenience.

2. PRINTED CIRCUIT BOARD REMOVAL:

Using a ¼" socket or angled flat-blade screwdriver, remove the two (2) screws holding the PCB in place. Once the screws have been removed, pull the PCB **straight out**, releasing the PCB from the retaining slots in the back of the enclosure.

3. ADDING LOAD RESISTORS:

Connect the first 2-ohm, 5-watt resistor to the red and black terminals on the back of the **POWERED** enclosure. This is the load for the **ACCESSORY** channel.

NOTE: The amplifier outputs are 180° **out-of-phase** with each other. This is corrected in the wiring **from** the PCB **to** the output for the **ACCESSORY** speaker **in** the **POWERED** enclosure.

NOTE: The **ACCESSORY** amplifier's signal return is **NOT** the black terminal. For test purposes, you **must** use the **red** terminal as the signal return line to prevent damaging the amplifier.

Next, remove the **black** wire from the **POWERED** enclosure's driver. Connect the second 2-ohm resistor between the black wire and the red wire (still connected to the driver). **NORMAL** polarity rules apply.

TESTING

1. IDLE CURRENT:

Apply the appropriate voltage to the line cord via a variac. Measure the dc **voltage** across **either** R120 **or** R121 for the **left** channel, and **either** R220 **or** R221 for the **right** channel. Each channel should be between 10 - 50 mA dc (10 - 50 mV across the resistors).

2. FREQUENCY RESPONSE:

With the sensitivity switch in the back of the enclosure set to the **"B"** position and the input cable **connected** to the signal source, adjust the input level to 500 mV at 1 kHz. Set the dB meter to reference at the input signal.

Move the dB meter to the output:

OUTPUT: 500 mV per channel.

(0 dB $\pm$ 1.8 dB from input)

RoomMate® PRINTED CIRCUIT BOARD TEST PROCEDURES (Continued)

THIS IS THE REFERENCE SIGNAL. Set your dB meter to reference and perform the following response test:

TABLE 1

FREQUENCY (Hz)	RESPONSE (dB)
1 kHz	0 - Reference
10 kHz	+16.0 ± 1.8 dB
100 Hz	+16.0 ± 1.8 dB

3. DISTORTION:

Return the signal source to 500 mV at 1 kHz. Measure the distortion at the output load resistors of each channel.

DISTORTION: <.25% on both channels.

4. COMPRESSOR TEST:

Using the 500 mV **input** signal as reference, increase the input signal to 3.25 volts. Measure the **output** signal.

OUTPUT: 3.25 volts (+16.2 dB ± 1.5 dB)

Increase input signal 2 dB (4 volts)

OUTPUT: 3.25 volts (+16.2 dB ± 1.5 dB)

5. SEPARATION TEST:

Reduce the input signal to 1.5 volts at 1 kHz. Eliminate the signal from the right channel input via **balance** control of amplifier **or** the **ring** of the plug.

OUTPUT: 1.5 volts (+10 dB ± 1.5 dB),
left channel

OUTPUT: <200 mV on the **right** channel

Repeat the same procedure for the opposite channel, via the **balance** control of the amplifier **or** the **tip** of the input plug.

6. NOISE RATIO:

Normalize the **balance** **or** the **input** cable. Remove input cable from the signal source.

OUTPUT: <100 uV, both channels. A weighted.

7. 10 dB SENSITIVITY SWITCH:

Reconnect input cable to the signal source. Assure that the input signal is 500 mV. Set reference on the **input** voltage. Measure the output.

OUTPUT: 500 mV per channel
(0 dB ± 1.8 dB from input)

Move the sensitivity switch on the back of the **POWERED** enclosure to the “A” position. Readjust the **input** signal to 500 mV and set reference on the input. Measure the output.

OUTPUT: 1.45 volts (+9.8 dB ± 1.5 dB)

8. OUTPUT OFFSET:

Set signal source to 0 volts. Using a digital volt-meter, measure the dc voltage across the load resistors.

OUTPUT: <50 mV per channel.

NORMALIZING THE SYSTEM

1. REMOVING LOAD RESISTORS:

Disconnect the resistor from the back of the **POWERED** enclosure. Also, remove the resistor from the black and red wires of the **POWERED** enclosure’s driver. Reconnect the black wire to the driver.

2. PRINTED CIRCUIT BOARD INSTALLATION:

Place the PCB onto the guide rails between the two baffle mounting posts. Push the board back into the enclosure until the clips lock into place. Do **NOT** pinch any wires.

Secure the front of the PCB with the two screws, using a ¼” socket or an angled flat-blade screwdriver. Do **not** overtighten.

Twist excess wire into service loops.

3. BAFFLE AND ENCLOSURE ASSEMBLY:

To reassemble the enclosure and baffle, align the port side of the baffle to the side of the enclosure that has the input terminals. (The baffle will fit correctly only one way.) Secure the baffle with the six (6) screws. Do **NOT** overtighten the screws.

4. GRILLE INSTALLATION:

To install the grille, first make certain that the logo position is correct (not upside down) with the print on the back of the speaker enclosure. Fit the grille to two adjacent corners of the enclosure. Gently apply pressure to the two remaining corners to fit the grille into the enclosure.

RoomMate® COMPONENT AND ETCH VIEW

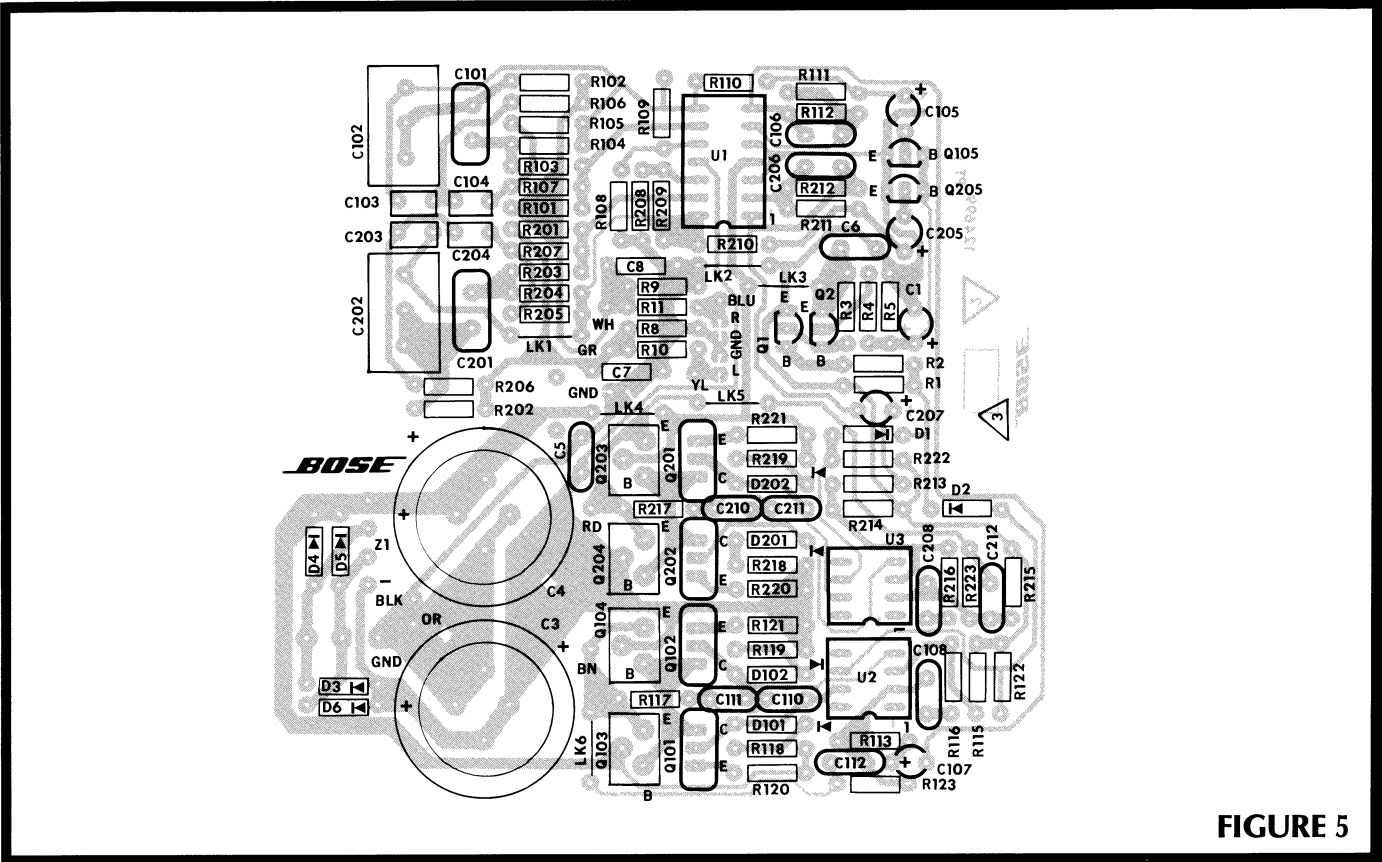
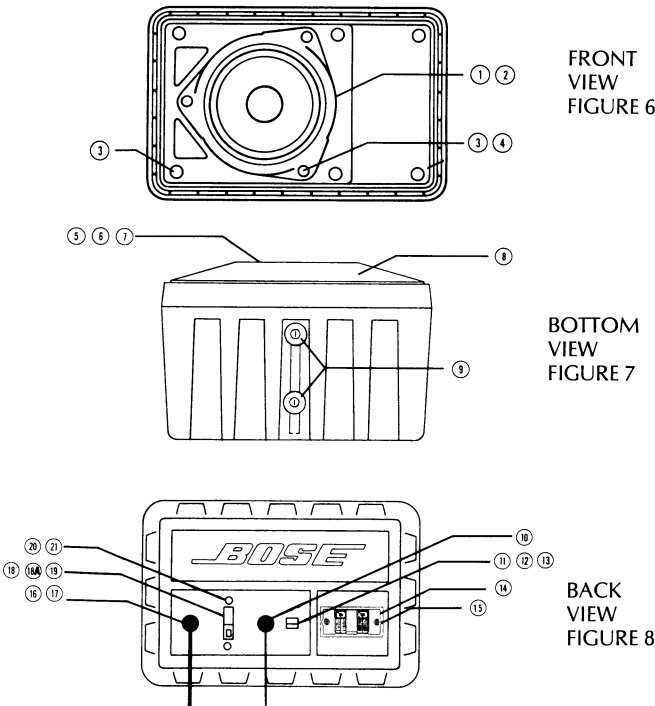


FIGURE 5

RoomMate PARTS DRAWINGS



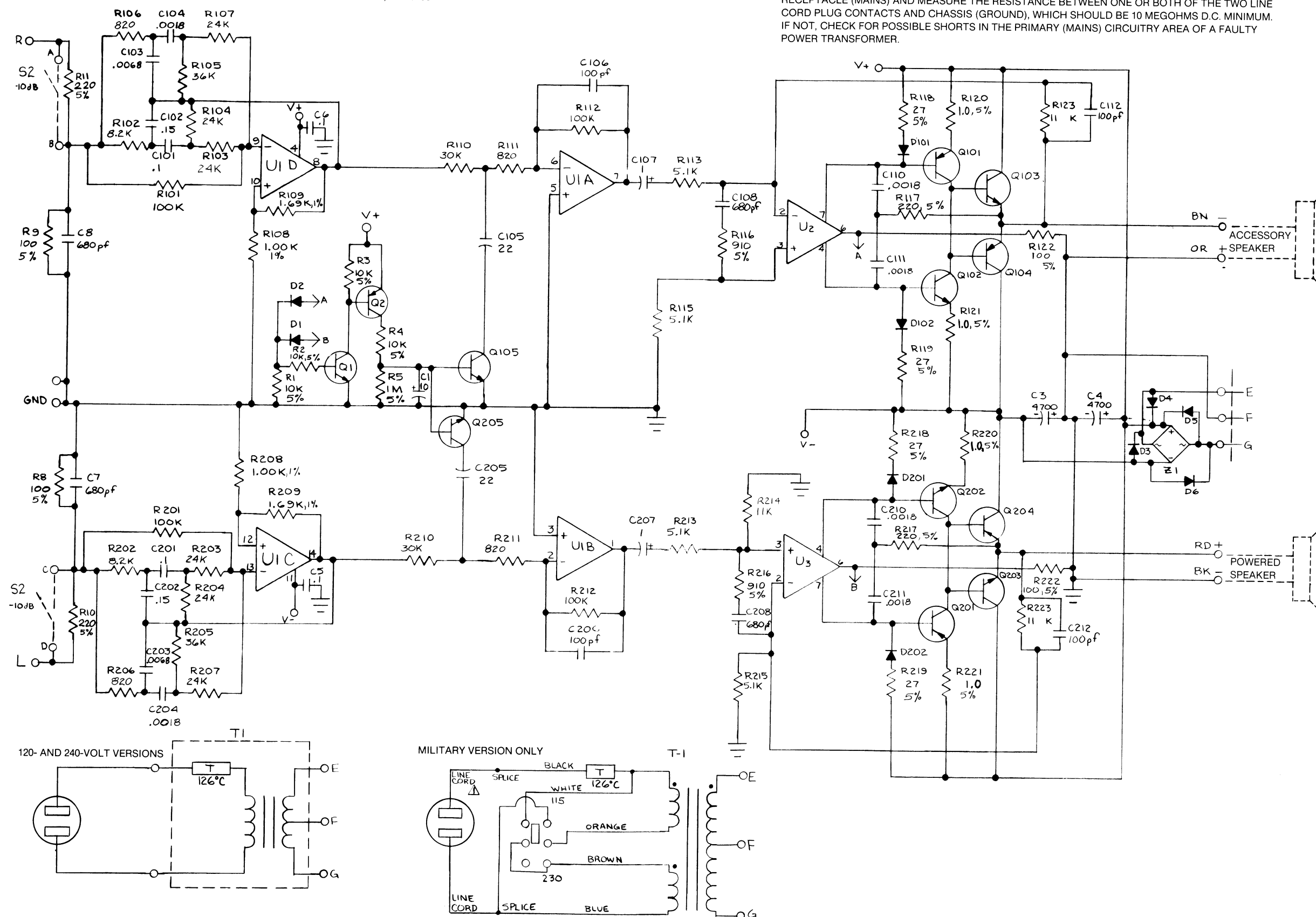
PARTS LIST

1	Driver	123561-5
2	Driver Gasket	128407
3	Screw, SM #8 x ¾ Bk	103126-12
4	J Clip	129504
5	Name Plate	125342-5
5	Name Plate (Apple/Bose)	130106
6	Nut, Push-On	125786
7	Foam Spacer	111114
8	Grille Assembly, Black	123967-11A
8	Grille Assembly, White	123967-41A
8	Grille Assembly (Apple/Bose)	123967-91
9	Threaded Insert	123991
10	Stereo Input Cable	123580
11	DPDT Slide Switch, 6 in	124919
12	Gasket, Gain Switch	128408
13	Screw, Hex Face, #8-32 x ¾ L	103802-06
14	Guillotine Connector	123990-01
15	Screw, Bk, Cr Rec #6 x ½ L	124773-08
16	Screw, Bk, Cr Rec #6 x ⅝ L	103122-10
17	Tinnerman Nut	124617
18	Military Line Switch	124854
18A	Military Transformer/Switch Assy	125666
19	Gasket, Military Line Switch	128409
20	Line Cord, 220V	125711
20	Line Cord, 120V	125710
21	Strain Relief	124724

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE 1/4W. 2%
AND ARE IN OHMS.
2. DIODES D3-D6 ARE AN ALTERNATE
TO BRIDGE Z1.
3. ! ONLY REPLACE: T1 WITH EXACT TYPE: P/N 124396 (120 VRMS), P/N 124397 (220/240 VAC), P/N 124398 (115/230 VAC MILITARY); AND LINE CORD WITH P/N 125666 (100, 120 and 115/230 VAC MILITARY), OR P/N 125711 (220/240 VAC) AVAILABLE FROM:
BOSE CUSTOMER SERVICE
78 TURNPIKE RD.
WESTBORO, MA. 01581

4. TO COMPLY WITH SAFETY STANDARDS, ALL ELECTRONIC PRODUCTS RETURNED FOR SERVICE MUST HAVE A RESISTANCE MEASUREMENT TEST MADE BETWEEN THE LINE CORD (MAINS SUPPLY) CONTACTS AND THE CHASSIS GROUND BEFORE RETURNING IT TO THE CUSTOMER. THE RESISTANCE MEASUREMENT IS TO MAKE SURE A POSSIBLE SHOCK HAZARD DOES NOT EXIST. THE ENCLOSURE MUST BE FULLY ASSEMBLED FOR TESTING. UNPLUG THE PRODUCT FROM THE WALL RECEPTACLE (MAINS) AND MEASURE THE RESISTANCE BETWEEN ONE OR BOTH OF THE TWO LINE CORD PLUG CONTACTS AND CHASSIS (GROUND), WHICH SHOULD BE 10 MEGOHMS D.C. MINIMUM. IF NOT, CHECK FOR POSSIBLE SHORTS IN THE PRIMARY (MAINS) CIRCUITRY AREA OF A FAULTY POWER TRANSFORMER.



RoomMate® AMPLIFIER/EQUALIZER PARTS LIST

SEMICONDUCTORS

Location	Description	Part No.
U1	IC (LS404)	120535
U2, 3	IC (LF411CN)	125903
Q1, 105, 205	Transistor - NPN (C536)	117921
Q2	Transistor - PNP (A608)	119168
Q101, 201	Transistor - PNP (DU51)	112998
Q102, 202	Transistor - NPN (DU01)	112999
Q103, 203	Power Transistor - NPN (D1062)	119893
Q104, 204	Power Transistor - PNP (B826)	119892
D1, D2	Diode 1N4148	121501
D101, 102, 201, 202	Diode 1N4150	121542
Z1	Bridge Rectifier (KBP005)	124785

CAPACITORS

C1	Elctlc, 10 uf 35V	119944-100
C3, C4	Elctlc, 4700 uf 16V	124997
C5, 6	Cer Disc, .1 uf	117502
C7, 8	Tubular, 680 pf ±10% Y5P	119274-681102
C101, 201	Film, .1 uf 5%	118091-104
C102, 202	Film, .15 uf 5%	118091-154
C103, 203	Film, .0068 uf 5%	118091-682
C104, 204	Film, .0018 uf 5%	118091-182
C105, 205	Elctlc 22 uf	119944-220
C106, 112, 206, 212	Cer, 100 pf 5%	119372-101
C107, 207	1 uf 50V	119942-1R0
C108, 208	Cer, 680 pf 10%	119272-681
C110, 111, 210, 211	Cer, .0018 uf 10%	119017-182

RESISTORS

Unless otherwise specified, all resistors are ¼ watt.

R1, 2, 3, 4	10.0K 5%	117704-1211035
R5	1 Meg 5%	117704-1211055
R8, 9, 122, 222	100 Ohm 5%	117704-1211015
R10, 11, 117, 217	220 Ohm 5%	117704-1212215
R101, 112, 201, 212	100K 2%	117704-1211042
R102, 202	8.2K 2%	117704-1218222
R103, 104, 107, 203, 204, 207	24K 2%	117704-1212432
R105, 205	36K 2%	117704-1213632

RESISTORS (Continued)

Unless otherwise specified, all resistors are ¼ watt.

Location	Description	Part No.
R106, 111, 206, 211	820 Ohm 2%	117704-1218212
R108, 208	1.00K 1%	119976-2211001
R109, 209	1.69K 1%	119976-2211691
R110, 210	30K 2%	117704-1213032
R113, 115, 213, 215	5.1K 2%	117704-1215122
R116, 216	910 Ohm 5%	117704-1219115
R118, 119, 218, 219	27 Ohm 5%	117704-1212705
R120, 121, 220, 221	1 Ohm 5%	117704-1211R05
R123, 223, 214	11K 2%	117704-1211132

VOLTAGE VARIANCES

	Strain Relief	124724
	Transformer, 120V	124396
	Transformer, 220V	124397
	Transformer, Military	124398
	Line Cord, 120V	125710
	Line Cord, 220V	125711
Transformer Mount	Screw, Hex Wshr Face, #8 x ¼	125916
	Butt Splice	124725

MISCELLANEOUS

Front PC Bd Mount	Tinnerman Nut	124617
Rear PC Bd Mount	Tinnerman U-Clip	124722
	Wire Wrap Pin	124616-6350
	Carton Kit RM-1 (Complete)	123969
	Carton	123988
	Foam Filler	124921
	Literature Kit (Complete)	123970
	Owner's Guide	125649
	Safety Inst. Non-Antenna	125521
	Accessory Brochure	125528
	RM-1 Inner Carton	123988
	Stereo Input Cable	123580
	Accessory Kit (Complete)	125904
	Interconnect Cable	123576
	3.5 MM Mono/Stereo Adapter	125007